

INP Market Bulletin

Indigenous Natural Products in Namibia (Issue 4, July 2012)

Welcome to INP Market Bulletin

In order to empower the producers of indigenous natural plant products, service providers, traders, international buyers and other stakeholders, the Indigenous Natural Products (INP) Activity of Millennium Challenge Account Namibia (MCA-N) has set as one of its goals the collation and dissemination of market-related information on indigenous natural products in Namibia. This will occur through the National Botanical Research Institute (NBRI) in the Ministry of Agriculture, Water and Forestry (MAWF), and will ensure that INP stakeholders are kept informed about production volumes and values, and recent developments in the market place.

This INP Market Bulletin presents a preliminary report, prepared within the framework of the MCA-N INP Activities, and is intended to provide an overview of production and exports and a review of market conditions for selected indigenous plant products.



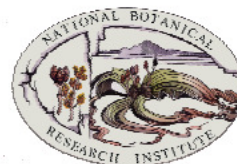
Commiphora resin



Quality control of ximenia by Tulongeni Twahangana Producer members

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THE MARKET IN BRIEF

DEVIL'S CLAW

Scientific name: *Harpagophytum procumbens* and *H. zeyheri*

Commercially harvested: all regions except Omusati Region

Total sales (Jan – Nov 2011): 592 685 kg

Estimated income (2011): N\$ 21 – 25 million

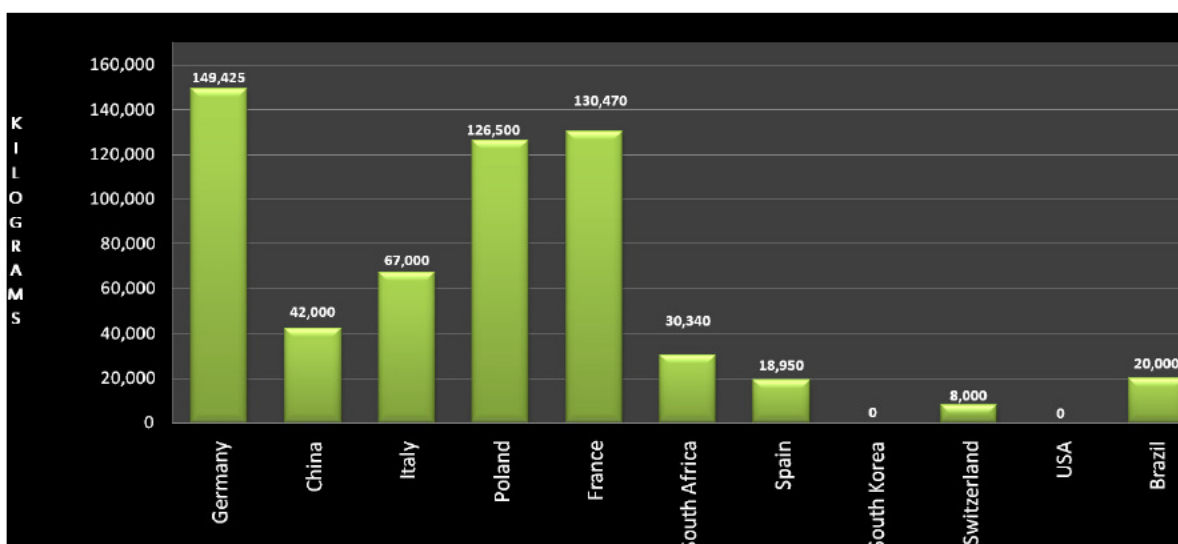
Estimated number of producers: unknown

Namibia exported a total of 592 tonnes of devil's claw to international markets in 2011, compared to 336 tonnes and 379 tonnes in 2010 and 2009 respectively. This is an increase of 66% over the average for 2009 and 2010. The export value for 2011 is estimated to be between N\$ 21 million and N\$ 25 million. The main export destination was the

European market, with Germany importing almost 150 tonnes, followed by France (130 tonnes) and Poland (126 tonnes). China is a relatively new market, and imported some 42 tonnes in 2011.

A significant development in 2011 was the increase in the production and sale of "sustainably" harvested devil's claw originating from producer groups currently being supported by the MCA-N INP Activity. A total of 102 tonnes originating from 21 producer groups was sold to a Namibian exporter. This represents about 17% of Namibia's exports and generated just over N\$ 2 million, which was paid directly to harvesters. Three of these producer groups are also supplying "organically certified" devil's claw.

Namibian devil's claw exports by country (November 2011)



HOODIA

Scientific name: *Hoodia gordonii*

Commercially harvested: Karas Region

Total sales (2011): 1 046 kg

Estimated income (2011): N\$104 600

Estimated number of producers: unknown

The international market demand for hoodia remains depressed. However, due to unstinting efforts on the part of a few farmers in Namibia who have continued to promote hoodia, new markets continue to be explored, although with mixed results. From November 2011 to March 2012, Namibia exported 1 046 kg of dried hoodia powder and 117 200 capsules to North America and various countries in Europe, Asia and Africa.



Hoodia flower

MARULA

Scientific name: *Sclerocarya birrea*

Commercially harvested: North-central regions

Total sales (2011): 6 080 kg

Estimated Income (2011): N\$487 418

Estimated number of producers (2011): 2 500

Exports of marula oil remained high for 2011/2012. Total marula exports for 2011 amounted to 6 080 kg; exports between December 2011 and March 2012 alone amounted to 3 040 kg, bringing the total exports for 2011 and the first quarter of 2012 to 9 120 kg. These exports generated a total income of N\$191 520, benefiting 2 500 women. Eudafano Women's Cooperative (EWC) also reported a slight increase in marula juice production for 2012. The fruit for this juice is supplied by rural women in northern Namibia, providing them with yet another income generating opportunity.

XIMENIA OIL

Scientific name: *Ximenia americana*

Commercially: North-central regions

Total sales (2011): 3 150 kg

Estimated income to PPOs (2011): N\$28 350

Estimated number of producers (2011): 491

The demand for ximenia oil remains strong. There was a small increase in production from 2010 until June 2011, with 3 150 kg being exported. There was a 21% increase between December 2011 and June 2012, with 3 810 kg being exported. However, the frost that occurred during the 2011 winter, and the heavy rains and wind experienced during the flowering and early fruiting season in the 2011/2012 summer, seriously reduced the fruiting of trees in the producing areas around Eenhana and Epembe in the north-central regions. As these are the main producing areas, the harvesting of ximenia fruit and the production of kernels has been very seriously affected this season. In order to address this and minimise the risk of poor production levels in the future, efforts are being made to expand the

harvesting area of ximenia to other areas, for example in Oshikoto Region, rather than to source the raw materials from only one area in one region.

KALAHARI MELON SEED OIL

Scientific name: *Citrullus lanatus*

Commercially harvested: North-central regions, Caprivi and Kavango regions

Total sales (2011): 380 kg

Estimated income to PPO (2011): N\$44 317

Estimated number of producers (2011): unknown

The market remains uncertain. Efforts are being made to develop "new" markets, possibly at a national level rather than an international one. A total of 268 kg of the oil was sold by EWC from December 2011 to March 2012 to both the national and regional markets, bringing total exports for 2011/2012 to 648 kg. Efforts to support the local production of cosmetics using Kalahari melon seed oil for the national market are being made in a bid to increase demand.

COMMIPHORA RESIN AND ESSENTIAL OILS

Scientific name: *Commiphora wildii*

Commercially harvested: Kunene Region

Total production (2011): 0

Total income (2011): 0

Estimated number of producers (2011): unknown

Negotiations with an international buyer during 2011 have not yet translated into any sales. The decision was made that no further harvesting of "the perfume plant" resin will take place until a firm order from a buyer has been received. No exports were recorded for in 2011/2012, and no harvesting of the resource took place. The Opuwo Processing Facility continues to process stockpiled commiphora resin for national and regional sales.

In 2011, 1 393 kg of *Sarcocaulon* (also used as a fragrance) was sold, generating some N\$195 000, which will be used in product development.

Summary of INP Sales (kg) for 2010 and 2011/2012

Product	2010	2011/12
Devil's claw (dried material)	335 638	592 685
Hoodia (dried material)	7 759	866
Kalahari melon seed oil	0	648
Marula oil	7 220	9120
Ximenia oil	3 230	3 780
Commiphora resin	3 089.9	0

MARKET UPDATE: HOODIA

The national and international markets for hoodia can both be described as depressed. However, from November 2011 to March 2012, Namibia exported 1 046 kg of dried hoodia powder and 117 200 capsules to North America and various countries in Europe, Asia, and Africa (mainly South Africa). According to HOGAN (the Hoodia Growers' Association of Namibia), most of the dry material exported to South Africa is sterilised and stored there in anticipation of orders, while some finished products (capsules, drops and gel) are re-imported into Namibia. Some 400 kg of dry material was sent to South Africa between November 2011 and March 2012. The majority of hoodia exports go to the international market. In general, the hoodia market is not expected to change significantly in the short term, but the farmers who are still engaged in the production of hoodia remain optimistic, and continue to seek markets by sending product samples to interested parties around the world.

Hoodia was once a promising poverty alleviation prospect, especially in southern Namibia, and at one stage more than 300 people were involved in the cultivation of the plant. Today, only three farmers are cultivating and marketing hoodia, and they only harvest and sell whenever there is an order. The Ministry of Environment and Tourism issued 91



Hoodia and kanna (*Sceletium*) products

export permits for hoodia powder and capsules between January 2011 and March 2012.

One of the main hurdles facing any future revival of market interest in hoodia is the lack of supporting scientific data on its safety and efficacy. The lack of proof that hoodia is a safe and effective product will continue to hinder efforts to find sustainable markets.

MARKET UPDATE: MARULA



Marula fruit

MARULA JUICE: Marula fruit processing and juice making at EWC provides another income-generating opportunity for rural women in northern Namibia. Marula juice is a favoured drink for many Namibians, especially those from the north-central regions, to the extent that annual festivals are organised to celebrate the drinking of the juice. The fruit from which the juice is expressed is sourced from rural women who are able to bring unprocessed fruit or juice to the factory in Ondangwa. The juice is mainly sold to local customers from in and around the town of Ondangwa. It is primarily sold as a fermented, alcoholic beverage.

This year, EWC produced close to 3 720 litres of marula juice, which it sold at N\$15 per litre, generating an income of N\$55 800. The demand for marula juice is low during the fruiting season, since most households produce their own marula juice. Out of season, however, when households have exhausted their own supplies, the demand for

marula juice increases, and it is during this period that EWC plans to sell their product.

People around Ondangwa know that marula juice is produced at EWC, and when production is high, an announcement is made on the radio to alert the community to its availability. EWC have healthy stocks this year, and plan to advertise on the radio.

Marula juice is processed by pressing the juice from the fruit pulp; the juice is kept for one day at room temperature and then moved to the cold room to be stored until it is sold. The cold storage arrests the fermentation process, and no preservatives or additives are added to the juice.

Although marula juice has been a product of EWC for many years, the factory cannot expand production due to the lack of processing infrastructure and storage facilities for increased raw material intake and juice storage.

Due to the good rains and the absence of flooding in the area, marula trees have fruited prolifically this year, and the potential for EWC to increase its production of marula juice appears to be high.

MARULA OIL FOR EXPORT: The demand for marula oil for export for use in cosmetics formulations was high from December 2011 to March 2012. EWC exported about 3 040 kg of marula oil to France, and some 100 kg to other buyers from southern Africa. The supply of raw materials appears to be strong this year due to a better fruiting season, and EWC is

anticipating a good harvest, and has planned for increased production intake to meet the demand from clients.

MARULA FOOD OIL: Marula food oil is yet to be launched in the formal market, although the product is already sold to consumers in the north-central regions from the EWC factory in Ondangwa. In Windhoek, a 500 ml bottle of marula food oil currently sells for N\$94, and a 250ml bottle for N\$50.



Marula oil press

SERVICES THE MAWF AGRICULTURAL LABORATORY CAN OFFER THE NATIONAL INP SECTOR

The Ministry of Agriculture, Water and Forestry (MAWF) has upgraded its agricultural laboratory to enable it to perform analytical services relevant to the INP industry within the agriculture sector. The laboratory structure has been modified, and appropriate new equipment has been acquired and installed. In the past, the laboratory dealt only with soil, animal feed and meat samples. However, infrastructural upgrading has created two more sections within the laboratory: the product development and value addition section; and the biotechnology section, where tests for genetically modified organisms (GMO) and DNA profiling can be carried out.

The laboratory is promoting the use of indigenous plants by conducting analysis of the chemical

composition of local produce. During 2011, Analytical Services, in collaboration with the Namibian Agronomic Board, developed the first official mahangu biscuits through a local SME, GB Mahangu Enterprises. The biscuits were displayed at trade fairs in order to gauge consumer responses and attitudes to the product. A report of the study was compiled and is available to the public as a guide for anyone who would like to launch a similar project.

The laboratory has added the following to its existing equipment: a modern protein analyser that does not make use of chemicals to produce results; real-time Polymerase Chain Reaction (PCR) equipment that produces accurate results in GMO detection; and High-performance Liquid Chromatography (HPLC)

and Gas Chromatography (GC) equipment to provide accurate results in chemical and nutritional composition analysis. The laboratory is also working towards obtaining accreditation so that it will be able to produce credible results on GMO, product development, soil analysis and nutritional analysis. During the course of 2011, numerous stakeholders and experts were invited to the laboratory so that they could provide expertise and advice relating to the various laboratory sections. In addition, a call for expressions of interest was made in the national media for experts in the various fields related to

agriculture to register with the MAWF so that they can be invited to provide specialised services to the public as the need arises.

In 2011, the MCA-N Innovation Fund project on “Understanding marula chemistry for commercialisation opportunities” made use of the Agrilab to test the chemical composition of marula fruit.

In an effort to make the Agrilab services available to the INP sector, relevant stakeholders have identified some of the analytical testing that may add value to the industry.



Soil samples in the soil laboratory awaiting analysis

Useful analytical laboratory work that AgriLab could perform for the INP industry

(Main reference for analytical methods: CODEX, additional official standard methods depending on the material to be analysed)

Oilseed and vegetable oils

- Oil content, moisture content
- Acid value (mg KOH/g), peroxide value (mEq O₂/kg), anisidine value
- GC Fatty acid profile (C:10-C:24) including trans fats, CLA and isomers
- Unsaponifiable fraction content

- Vitamins
- Heavy metals (see below)
- Contaminants (see below)

INPs, fruits, leafy vegetables, cereal grains

Nutritional profile:

- Digestible fibre content, digestible protein content
- Micro-element content: Na, K, P, Ca, Fe etc.

- Heavy metal content: As, Cd, Cr, Cu, Hg, Mg, Mn, Ni, Pb, Sb, Se, Zn
- Vitamins
- Contaminants: pesticide residues, including organochlorine residue
- Mycotoxins

Devil's Claw (*Harpagophytum procumbens* & *H. zeyheri*)

- Heavy metals, particularly Pb, Cd, As and Hg
- Harpagoside(HS) content (extraction with alcohol and determination by HPLC): moisture content, 8-para-Coumaroylhapagid (8-pCHG) and HS contents, so as to calculate the 8-pCHG index on "dry basis" $\% \text{ m/m} = 8\text{-pCHG} / (8\text{-pCHG} + \text{HS})$

Challenges

The analytical services laboratory continues to experience a shortage of qualified personnel in various fields, such as analytical chemistry, food science and technology, biotechnology, and product development and processing. The call for expressions of interest is still open to Namibian experts with experience in agriculture, food processing, analytical chemistry and any other related fields to submit their qualifications and CVs to the MAWF, so that they can be included in the database of experts who can provide analytical services.

FRAGRANCES FROM NAMIBIA, AND THE STORY OF VEERII TJIVINDA



Omumbiri: "A handful goes a long way"

Tucked away in the northwest corner of Namibia is Kunene Region, an arid environment that is home to the nomadic Ovahimba people and the range of many endemic plant species. Products from two such plants, *Commiphora wildii* and *Sarcocaulon mossamedes*, are currently being developed; the plants are sustainably harvested and traded, mainly

by the Ovahimba communities, to generate much-needed cash income.

Much of the important groundwork was undertaken by a Namibian service provider, Integrated Rural Development and Nature Conservation (IRDNC), with support from donors such as World Wildlife Fund (WWF UK) and the Integrated Community Ecosystem Management (ICEMA) project. Now MCA-N, with funding from the American Government through the Millennium Challenge Corporation (MCC), is continuing to assist producers through support to the Producer and Processor Organisation (PPO) sub-activity and the Indigenous Natural Products Innovation Fund (INP IF).

Initial work undertaken by IRDNC began towards the end of 2004, when the need to diversify income-generating opportunities was identified. At that time, conservancy communities derived most of their income from wildlife and tourism, and the decision was made to investigate the possibility of commercialising plant resources as a means of generating additional income. This also provided an opportunity to involve women more directly in the conservancies, since women are the traditional managers and users of plant resources in these communities.

Omumbiri (the Otjihimba name for *Commiphora wildii*) naturally exudes large quantities of resin in response to environmental stresses, without the cutting or scarring required to stimulate resin production in some similar species in other countries. As a result, collecting the resin is non-destructive and in no way harms the plants. Ovahimba women have

used *omumbiri* resin for its fragrant properties since time immemorial. It is mixed with red ochre and animal fat to form a paste, which is usually stored in a cow horn and applied to the skin daily.

After the completion of substantial groundwork, which included resource mapping, environmental impact assessments and the setting up of supply chains, the first commercial harvest took place in late 2007, with a total of five tonnes of commiphora resin, worth USD 50 000, being collected by 319 harvesters.



Henry Tjambiru, Buying Point Manager and Conservancy Field Officer, and a group of Ovahimba harvesters discussing the commiphora project (Orupembe Conservancy)

Members of the Orupembe, Marienfluss, Sanitatis, Puros and Okondjombo conservancies have established protocols for harvesting and set up central buying points. The MCA-N PPO sub-activity is providing training and marketing support through a contract with the Natural Resources Institute (NRI) of the University of Greenwich, UK, with IRDNC being responsible for implementation. As a result of the PPO sub-activity support, an estimated 1 400 commiphora harvesters are expected to benefit in the years to come. One such harvester is Veerii Tjivinda.

Veerii lives in the village of Otjimenje (meaning “place of the springbok”) in Orupembe Conservancy. *Omumbiri* harvesting runs in the family. Veerii’s mother, who is still an active conservancy member, attended the first workshop in 2004, at which the project was initially discussed. Veerii, who is now 17 years old, has been assisting her mother with harvesting *omumbiri* for the last five years.

According to Veerii, “The *omumbiri* project is important for buying food and other necessities such as blankets, and that is why we pay so much attention to it.” Harvesters directly earn N\$50/kg for the resin, and an additional N\$20/kg is generated from sales to cover management and logistical costs. Veerii also says that she feels proud that people from

elsewhere in the world are using *omumbiri*: “The tree is important for providing resin. We are using it in our culture, and it is helpful in maintaining our culture.” She says that she feels it is important that a steady and reliable market is developed so that they can continue to earn cash. With a smile she says, “I will do this for the rest of my life, and just as my mother has taught me, I want to teach others.”

In 2009, two steam distillation stills were purchased by the ICEMA project, one for processing the *Commiphora wildii* resin, and the other for *Colophospermum mopane* seeds. These were manufactured in South Africa and delivered to Opuwo in May 2010. Unfortunately, when the ICEMA project ended in June 2010, the stills were not yet fully operational. In March 2011, MCA-N commissioned the company which had manufactured the stills to come to Namibia to address the technical issues that were preventing them from running. This was done, and in addition, training was provided to the still operators. By July 2011, remaining technical problems, such as water quality, had been solved, and the stills became fully operational. Since then, after many years of talk about such a processing facility being built, selected commiphora harvesters have visited the facility to see for themselves what is happening to their resin.



Veerii Tjivinda

Kapukire Hepute had this to say: “Now that the *omumbiri* project has started, we do not need to borrow food from our neighbours. If you are hungry today we can go and harvest and get money, and tonight we can buy food.”



90 years old and still harvesting: Kapukire Hepute, from Otjinungwa village in Marienfluss Conservancy

At the beginning of 2012, an INP Innovation Fund Grant was awarded to NRI and its partners, IRDNC and PhytoTrade Africa, to address efficiency- and quality-related matters, regulatory requirements, and business development planning, and to forge links with the private sector to create products, thereby enabling entry into the international market. In November 2011, Michel Mane, President of the Americas Region of the company V. Mane Fils, together with Stephane Piquart from the BeHave

company, visited harvesters and the distillation facility in Opuwo. The INP Innovation Grant's objectives include the establishment of a sound business relationship with V. Mane Fils.

V. Mane Fils is a French company that was established in 1871, and is to this day still run by the Mane family. It has grown to be one of the world's leading flavours and fragrances companies, employing some 3 000 people, and with a presence in about 30 countries. (For more information, visit <http://www.mane.com/vision-and-values>.)

Maintaining the supply chains that have already been put in place will ultimately depend on access to reliable markets. If these supply chains were not to be utilised because of a lack of demand, they would disintegrate, and significant effort would be required to re-establish and reorganise them so as to achieve the requisite level of supply. In addition, there will also have to be ongoing focus on the development of new products, and to this end, two other commiphora species (*C. angolensis* and *C. krauseliana*) are being assessed for their commercial development potential. The Innovation Fund Grant for essential oils will also carry out trials on other plants in order to identify a “pipeline” of products, thereby contributing to the viability of this fledging essential oil industry in Namibia.



Michel Mane and Stephane Piquart

With thanks to Karen Nott and Veerii Tjivinda for giving so freely of their information and insights

NAMIBIAN STANDARDS THAT APPLY TO THE INP INDUSTRY

Standards are becoming increasingly important in global competition. According to available statistics, in addition to consumer organisations, trade unions and other organisations, over 25 000 firms are involved in setting various standards regimes in the European Union alone. Compliance with both national and international standards is a requirement for entry into any market, whether domestic or

international, and also for ensuring quality, product efficacy, health safety, and environmental sustainability. The trade rules of the World Trade Organisation (WTO) allow countries the freedom to set and implement standards for the protection of human, animal and plant health. In reality, the production, processing, distribution, packaging, labelling and sale of foodstuffs must take place in

compliance with a mass of laws, regulations, codes of practice, and guidelines.

Namibian food legislation and food standards are governed by several government ministries, and by the Namibian Standards Institution (NSI), which has been mandated to perform this function by the Ministry of Trade and Industry. The NSI plays an important role in the country's standards-setting landscape for most of the products in Namibia, and acts as the competent authority for the determination of Namibian standards, especially those related to fisheries and fish products, and canned food.

The NSI is a statutory specialised institution of the Ministry of Trade and Industry, established under the Standards Act, (No. 18 of 2005), with overall responsibility for the co-ordination of matters of standardisation, quality assurance, metrology and conformity assessment, including testing. In terms of Section 21 (1) of the Standards Act, the NSI is empowered to issue a mark of conformity that may be applied to any commodity, system or document which complies with the specifications of the relevant standard.

In 2011, the NSI launched its Certification Marks of Conformity. These identify the products, processes and services that meet the requirements of a standard. Certification is a conformity assessment procedure whereby an approved third party such as the NSI visits an organisation, assesses their products, processes and services, and issues a certificate to confirm that the organisation abides by the principles set out in the relevant standard, following industry best practices. The vendor is issued with a certificate which demonstrates to the buyer that the supplier complies with international standards, and this increases the confidence of the buyer in the products of and services rendered by the certified enterprise.

There are three types of standards with which producers must comply:

International standards are standards set by multilateral agreement in one of a handful of recognised standards-setting bodies. For example, standards on hygiene and food safety (applicable to both processing of ingredients and final products) are set by the Codex Alimentarius Commission of the WHO and the United Nations' Food and Agriculture Organisation.

Domestic import standards (technical regulations, in WTO terminology) are set by countries to control the quality, safety and form of imports. The WTO strongly encourages member countries to follow international standards when setting their domestic import standards.

Most voluntary standards are set by private-sector buyers. These are not subject to WTO rules.

Another type of voluntary standard is industry quality standards, such as eco-labels. These are self-imposed standards that attest to the quality of the product or the manner of its processing, usually in the hopes of fetching a higher price.

National standards relevant to the INP sector in Namibia

The major player in the Namibian export market for INP such as devil's claw, marula oil for cosmetics and ximenia oil regulate themselves in conformity with international standards. For many of the INP products, the NSI has no Namibian standards in place, but uses international standards to which most of the producers must conform. Locally produced finished products that may require conformity to a set of standards in the INP sector are jam, fruit juice, oil and cosmetics.

Jam

The NSI has no specific Namibian standards on the processing of jam. However, jam products are regulated under Codex Alimentarius Standards (CODEX STAN 296-2009). This applies to jams, jellies and marmalades offered for direct consumption, including for catering purposes or for repacking, if required. Under this standard, jam is defined as "a product brought to a suitable consistency, made from the whole fruit, pieces of fruit, the unconcentrated and/or concentrated fruit pulp or fruit puree, of one or more kinds of fruit, which is mixed with foodstuffs with sweetening properties, with or without the addition of water".

In general, the standards relate to aspects such as essential composition and quality factors, basic ingredients, fruit content, defects and allowances for jams, food additives and colours, preservatives, contaminants, hygiene, labelling, fruit quantity and sugar declaration, and methods of analysis and sampling.



Marula jam

Fruit juice

The NSI has no Namibian standards that are applicable to the processing of juice. The producers of juice are regulated under CODEX GENERAL STANDARD FOR FRUIT JUICES AND NECTARS (CODEX STAN 247-2005).

Fruit juice is defined as the “unfermented but fermentable liquid obtained from the edible part of sound, appropriately mature and fresh fruit or of fruit maintained in sound condition by suitable means including post-harvest surface treatments applied in accordance with the applicable provisions of the Codex Alimentarius Commission”.



Collecting marula fruit

Some juices may be processed with pips, seeds and peel, which are not usually incorporated in the juice, but some parts or components of pips, seeds and peel, which cannot be entirely removed by Good Manufacturing Practices (GMP) will be acceptable.

The juice is prepared by suitable processes which maintain the essential physical, chemical, organoleptical and nutritional characteristics of the juices of the fruit from which it comes. The juice may be cloudy or clear, and may have restored aromatic substances and volatile flavour components, all of which must be obtained by suitable physical means, and all of which must be recovered from the same kind of fruit. Pulp and cells obtained by suitable physical means from the same kind of fruit may be added. A single juice is obtained from one kind of fruit. A mixed juice is obtained by blending two or more juices or juices and purées, from different kinds of fruit.

Fruit juice is obtained as follows:

- **fruit juice directly expressed** by mechanical extraction processes; and
- **fruit juice from concentrate**, by reconstituting concentrated fruit juice with potable water that meets the specified criteria.

In general, the regulation stipulates standards regarding essential composition and quality factors composition (basic ingredients); permitted ingredients; quality criteria; authenticity; verification of composition; quality and authenticity; food additives; processing aids – maximum level of use in line with good manufacturing practices; contaminants (pesticide residues); hygiene; and labelling.

Cosmetics

There are no Namibian standards in place for cosmetics. Cosmetics are governed by the Medicines and Related Substances Control Act (No. 101 of 1965). The standards applicable to the production, processing, distribution, retailing, packaging and labelling of cosmetics are governed by the Cosmetic, Toiletry and Fragrance Association of South Africa (CTFA) Cosmetic Compendium. The CTFA Cosmetic Compendium consists of a number of Codes of Practice and Standards

pertaining to various aspects of the cosmetics industry, as well as seven Annexes which deal with cosmetics ingredients. This ensures that very stringent requirements regarding permissible ingredients are in place.

With the exception of products exported to international markets and a few products sold in the formal market outlets, many of the indigenous finished products produced by small- and medium-size enterprises (SMEs) are not subjected to any form of testing for contaminants (microbial contents) and/or chemical composition, and they are not produced under any processing standards. When trying to introduce their products into the formal market system, it is important that producers ensure that their products adopt some set of standards to enhance product safety and traceability. Experience from the market place shows that without adequate

scientific analysis, and proper labelling and packaging, producers may find it difficult to penetrate markets.

To promote broader standards adoption, companies involved in the INP sector are encouraged to become familiar with national and international standards, and to actively participate in the NSI standardisation project by contributing their personnel to serve on the technical committees.

For more information on standards and regulations, please contact NSI Headquarters in Windhoek:

The Forum Building (formerly Sanlam Building)
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UPDATE ON THE IMPLEMENTATION OF PROJECTS SUPPORTED BY THE MCA-N INP INNOVATION FUND

Understanding marula fruit chemistry to enable innovative commercial opportunities (PhytoTrade Africa)

This project commenced in March 2011 and was concluded in February 2012.

In order to effectively commercialise marula in Namibia, it is necessary to understand the chemical and physical changes that occur during the rapid ripening and rotting process of the fruit. A project team was established to carry out a study designed

to understand the chemical and physical changes in the ripening process, using local technicians and laboratory facilities, and to provide expert training and data evaluation.

The project team successfully produced 400 samples from 50 trees, recorded a large data set, and evaluated the data.



Marula juice analysis



Batches of marula stored for analysis

The data evaluation successfully identifies the marula fruit chemical and physical changes through eight days of ripening. These data are correlated with traditional knowledge regarding fruit and produce characteristics at a clear definition of ripening. The correlation of chemical parameters of ripening with local knowledge forms the basis upon which to develop industrial supply chains of marula fruit.

The chemical analysis also provides insight into the commercial potential of marula fruit products. In particular, although in low levels, important components for human health – catechins and other polyphenols – were identified in marula fruit from Namibia. Results also show that marula fruit contains significant quantities of potassium, which is also critical for human health, in particular for normal blood pressure, brain and muscle function, and heart health.

A review of scientific literature and traditional knowledge on marula fruit reveals extensive

reference to a series of health conditions generally referred to as “metabolic syndrome”, for which there is significant commercial interest in functional foods and beverages, and dietary supplements.

Collectively, these findings provide ample qualification for marula fruit products to be positioned for heart health, normal blood pressure, and related conditions in the growing market for functional foods and beverages.

A confidential “Draft Business Model” was developed, in which a scenario is outlined for EWC and the Eudafano Women’s Marula Manufacturing to attain sales of marula products reaching some N\$ 2.5 million within three years, and around N\$ 10 million within five years. A risk-reduction strategy is included in the model, and various products and potential clients and partners are identified.



Identification of marula batches

Optimal oil processing technology and competitiveness (PhytoTrade Africa)

This project has three focal areas. The first has investigated improved processing technologies for four indigenous Namibian oils: *Schlerocarya birrea* (marula); *Schinziophyton rautanenii* (manketti or mongongo); *Ximenia americana* and *X. Caffra* (blue sour plum); and *Citrullus lanatus* (Kalahari melon). On the basis of the research results, a new hydraulic press has been acquired so that further controlled extraction parameters can be established. By the



Decortication trials conducted by PhytoTrade Africa

end of June, the project will have sufficient data to develop the business feasibility studies and propose different business models for the adoption of processing technology alternatives. The alternative models range from the adoption of new extraction or filtration technology to new processes applied to whole fruit or nuts.

The second focal area is to research value addition to the by-products of processing these species. Research has provided guidelines on the preferred extraction parameters for citrulline to be captured as an extract from Kalahari melons. PhytoTrade is looking further into the potential commercial applications of the extract, and extract specification requirements. The project is currently analysing the seed cake to determine if there are any components of value for the industrial, medicinal or cosmetic markets.

The third focal area relates to the production of detailed safety and positioning statements for the cosmetic oil ingredients.

NEW GRANTS AWARDED FOR THE SECOND ROUND OF THE INP INNOVATION FUND

Innovative joint health ingredient derived from devil's claw for the American market

Main Applicant: EcoSo Dynamics

Partners: PhytoTrade Africa and Vital Solutions

Project duration: 1 year (commencement date: 1 March 2012)

The Grant aims to pave the way for an innovative joint health ingredient obtained from devil's claw, that can be launched on a large scale into the American market. The primary objective of this Grant is to support innovation which leads to further value addition for Namibia's devil's claw. Such successful innovation is expected to have a substantial ripple effect through to rural harvesters and their community-based organisations, as it should lead to an increase in profits and improved income for primary producers, thereby contributing to their livelihoods.

The successful implementation of this Grant will have a multilayer impact in Namibia, and will address household income at community level, and household income and employment opportunities at factory level. The estimated export earnings from

devil's claw for 2011 are estimated to be between N\$ 21 million and N\$ 25 million. It is anticipated that the total value generated by devil's claw could increase by up to 60% if 100 tonnes is processed locally, possibly rising to a revenue stream of some N\$ 41 million annually.

EcoSo Dynamics CC, the applicant for the Grant, has teamed up with EU-based experts in order to investigate the regulatory requirements that must be



EcoSo devil's claw tablets

met to enter the American market. An extract will be prepared through a number of trials which will meet regulatory approval without violating existing patent rights. A business plan and a “go to market” strategy will be developed in order to prepare the way for the successful launch of the product.

At the same time, EcoSo Dynamics CC will explore a new company structure which assures that benefits will be ploughed back to harvesters and community-based organisations. EcoSo Dynamics CC presently

sources from and supports 22 conservancies and community forests throughout Namibia. More than 2 000 registered harvesters in 120 villages participate in on-going training, and are monitored on a frequent basis. Many of these are already supported by Grants provided by MCA-N. Supporting organisations like CRIAA SA-DC, IRDNC and the Namibia Nature Foundation play an important role by supporting this initiative. This creates a sound resource base for the objective of this Grant.

Namibian Essential Oil Innovation (NEOi) project

Main applicant: Natural Resources Institute, University of Greenwich, UK

Partners: Integrated Rural Development and Nature Conservation (IRDNC) and PhytoTrade Africa

Project duration: 18 months (commencement date: 1 February 2012)

The overall aim of the Grant is to enable the establishment of an essential oils business in which Namibian PPOs have a leading stake. The business is to focus on, but not be restricted to, commiphora and mopane essential oils. The intention is that the business develop the capacity to process raw materials sourced from PPOs into essential oil extracts that meet international standards and regulatory requirements, and can successfully sell into value chains.

NEOi aims to develop and acquire this capability through practical processing trials, product development, and dialogue with industry, and through know-how transfer from the private sector. NEOi will work with the pilot processing facility in Opuwo that is currently operating as a development initiative. To commercialise the current operation, actions will be taken to optimise production processes to meet market demand and develop a viable business model involving PPOs.

Expected results/impacts

The development of a Namibian wild-harvested essential oils sector will bring economic and social benefits at a number of levels.

At the harvester level, the successful development of a domestic and international market for commiphora and mopane essential oils will create income opportunities mainly for the women who are resin gatherers and mopane seed collectors. Because most harvesters are women, there will be increased overall benefits at the household level.

When the project commenced in February 2012, there were 1 400 potential commiphora harvesters in five PPOs, and 2 500 potential mopane harvesters in four PPOs who were also sorting and pre-processing their mopane. Several more identified PPOs are expected to join the project once markets have been secured.

The Opuwo Processing Plant, a PPO in its own right, currently employs two full-time staff members, with the capacity to expand to five or more staff members as oil production increases with increased supply and sustained commercial demand.

The potential importance of such production is reflected in the fact that commiphora resin as a raw material has a relatively low export value of approximately US\$10/kg, annually earning a potential US\$100 000 at an estimated sustainable harvesting level of around 10 tonnes. Conservatively assuming an essential oil extraction rate of 5%, and estimating the market price at US\$500/litre (similar to myrrh), one can estimate the potential annual commercial value to be in the order of US\$250 000.

The value of mopane seed oil is harder to estimate. The supply is abundant, but extraction rates are currently estimated at lower than 5%. A similar product, Turpeneol, sells for US\$9/kg wholesale, which suggests that a pilot extraction from 20 tonnes might be worth US\$9 000, though mopane may command a higher price because of its relative scarcity.

Given the strong relationship between scarcity, price and quality, commercial interest in these and other Namibian novel and rare oils is likely to be substantial.

Concluding remarks

The indigenous natural product sector experienced a rather unpredictable supply and demand situation from 2010 into 2011. While some products such as marula oil for cosmetics, ximenia oil and devil's claw have performed well in terms of demand from the international market, the supply of raw materials to meet this demand has been somewhat inconsistent, due in part to environmental factors which affect the productivity of the resources. Commiphora, on the other hand, has not performed to expectations; there was no harvest or export of the resource for 2011/2012 because there were no orders from the international market.

The MCA-N projects funded through the first and second rounds of the Innovation Fund are progressing well, and some of the projects have

yielded favourable scientific research results. The project on understanding marula fruit chemistry to enable innovation and commercialisation opportunities was completed in February 2012.

The outcome of the third round of the Innovation Fund should be finalised by the end of July or early August 2012. It is expected that this will be the last round for funding from the MCA-N Innovation Fund to support research in the sector.

Further information on the INP Activity is available on the MCA-N website:

<http://www.mcanamibia.org>

(see under Agriculture/Indigenous Natural Products)



Devil's claw training in Orupupa Conservancy

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